



State of Illinois

ENVIRONMENTAL PROTECTION AGENCY

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May 17, 1996

Mr. Brad Bradley
Remedial Project Manager
Office of Superfund (S-6J)
USEPA Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604

**Re: NL/Taracorp
L1190400007
Superfund Technical
Preliminary Cap Design Review Letter**

Dear Brad:

The purpose of this letter is to convey Illinois Environmental Protection Agency (IEPA or Agency) comments on the preliminary cap design for the waste piles on the Taracorp/NL Industries Superfund Site Granite City, Illinois. The comments have been listed in sequence with the Sections of the specifications except for the initial general and drawing comments. This means that minor and major concerns will be intermixed throughout this letter such as grammatical comments in between two engineering or environmental comments. It is requested by this Agency that all comments expressed within this letter, whether grammatical or otherwise, be addressed by the United States Environmental Protection Agency (USEPA) and/or incorporated into the design. It should also be noted by the USEPA and United States Army Corps of Engineers that the request for IEPA comments within two weeks of the receipt of subject documents has not allowed a complete review by all concerned parties within the IEPA. Therefore, this review letter outlines only the concerns of the State Project Manager which may or may not encompass all Agency concerns. New comments could appear in the next review letter not only because new information will be added to the design documents, but also because of the short review period and the fact that some IEPA Sections have not yet commented. Future technical reviews must be allotted more time than was allowed for this letter.

In general, Alternative B is the capping choice preferred by the IEPA. This is mainly for two reasons; less retaining wall around the pile and only one pile rather than the two in Alternative A. It is believed that the retaining wall and pier sections will require more maintenance in the future as compared to sloping the cap to grade. The IEPA could ultimately be required to assume operation and maintenance (O&M) on many facilities depending on the scope of Superfund

EPA Region 5 Records Ctr.



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Reauthorization. This Agency will not, as a policy, select high O&M remedies. The specifications for the design appear to reflect antiquated data such as, waste pile volumes and groundwater information. Also, most of the specification sections concerning the synthetics within the cap system lack detail. At the very least, a range of options for the synthetics should currently be under consideration. However, the geomembrane is the only portion of the cap system enumerated at 40 mil. Finally, for the sake of continuity, one name and/or abbreviation for the site and the capitalization should be chosen and carried throughout the document. All of the following can be found within the specifications; "N.L. Industries site", "NL Industries/Taracorp Superfund site", "NL/Taracorp Site", "NL Industries site", "NL Industries Site", "NL Site", and "NL Industries/Taracorp site"

Drawing comments:

- The retaining wall needs to be clearly expressed. As the drawings appear now, it is impossible to determine the extent of the wall in Alternative B.
- A detail of the anchoring system used for the cap and liner must be provided.
- A detail of the synthetic seams must be provided along with a section added to the specifications on the seaming and overlapping procedures.
- Details of both of the cap/formed retaining wall joint and the cap/drilled pier retaining wall joint must be shown. This is required for the liner/wall joints also.
- A detail of the wall drains along with their locations must be provided.
- The thickness of the pre-cast concrete panels needs to be provided in the plan view of the drilled pier retaining wall.

Specification Comments:

PART 1 - GENERAL DESCRIPTION

1. INTRODUCTION.

- The final item listed in the submittal accomplishments is verification of the functional intent of the Record of Decision (ROD). This sounds as though there will be a section within the specifications that compare requirements within the ROD to the design. Is this interpreted correctly?

3.2. RECORD OF DECISION (ROD) - BRIEF PROJECT DESCRIPTION.

- The first sentence of the second paragraph neglects the fact that the groundwater (GW) portion of the remedy will be implemented in a future phase of the remediation.
- The fourth sentence states that "All battery case materials and contaminated residential soils with lead concentrations greater than 500 ppm will be excavated and hauled to an off-site RCRA facility.". This is and was not the case as the standard operating procedure for excavation is to stop at three feet in residential areas and one foot in alleys.

5.1.1. Taracorp Pile.

- The volume (2,450 yd³) for the St. Louis Lead Recyclers pile differs from the volume stated in section 5.1.2.1. as does the range of lead concentrations.

5.1.2.1.

- The surface lead concentration for the unpaved areas expressed in the final sentence should be done in the form of a range rather than a single number. This is assuming more than one sample has been acquired from Trust 454.

5.1.3. Groundwater. (GW)

- The fact that the GW in and around the pile and the site is contaminated with excessive levels of arsenic, nickel, lead, and cadmium has not been addressed in this section.

5.1.5.2.

- On each day of the trench excavations in the waste pile (Woodward-Clyde, February 1995), at least one ambient air monitor detected total lead levels above the 1.5 ug/m³ National Primary and Secondary Ambient Air Quality Standard. This section should reflect these past air emission problems.

5.2.1.

- The information in this sub-section may be more suitable at the beginning of section 5.

5.2.2.

- The information in this sub-section may be more suitable at the beginning of section 5.
- Also, the third sentence beginning "SLLR continued operations....." seems to run-on. It is suggested to shorten the sentence to something in the nature of; "SLLR continued operations until March 1983." or "SLLR quit in March 1983.".

5.2.3.

- Taracorp was the only defendant that was named in and that signed the March 1984 consent order with the IEPA for air emissions and dust control.

PART 2 - DESIGN REQUIREMENTS AND PROVISIONS

1.1. INTRODUCTION.

- The third bulleted item within this sub-section states that "Some regrading of the Taracorp waste pile is acceptable;....". As shown in the 1995 Waste Pile Investigation, air emissions will likely be a problem with any intrusive work on the pile.
- The seventh bulleted item must have "placed over a liner" added to the first sentence.
- The eighth bulleted item states that the bottom liner of the landfill addition will consist of a Geosynthetic Clay Liner (GCL) only. This does not meet State applicable or relevant and appropriate requirements (ARARs).

1.2. PREDESIGN.

- "Was" should be changed to "were" in the first sentence.

2.1. General.

- It should be noted that GW investigations have occurred not only during the 1988 Remedial Investigation, but also in a supplemental investigation in 1992 and on a quarterly basis since.

2.3. Groundwater.

- How many and which monitoring wells were used in which investigation(s) to determine the physical parameters of the aquifer?
- This may be the most appropriate sub-section in which to talk about the GW contamination.

2.3.1. Groundwater Elevation.

- Which investigation found perched GW at five feet below the site?

2.3.3. Hydraulic Conductivity.

- What is the depth of the "deeper glacial deposits"?
- What about the shallow glacial deposits?

2.3.4. Flow Rate.

- A range of flow rates should be given.

2.3.5. Natural Contaminants.

- The statement about lead concentrations observed in on-site wells being well within drinking water standards is completely false and must be removed!

2.3.6. Potential Transport Pathways of Lead Into the Aquifer.

- The solubility value should have a footnote describing the source of the information.
- The lead in the pile is highly leachable and soluble as proven by Toxicity Characteristics Leaching Procedure Testing and the current GW contamination. Therefore, the portion of this sub-section that reads like the lead in the pile will not enter the GW must be changed or removed.

2.3.7. Monitoring Wells/Piezometers.

- According to the Second Quarter Groundwater Sampling Report dated November 1995 there are sixteen active monitoring wells on and near the site.

3.2.2.1. Vegetative Cover.

- Where are the 5:1 slopes referred to in this sub-section?
- The word "born" within the final sentence should be changed to "borne".

3.2.2.2. Topsoil.

- It is recommended that the topsoil lift have some compaction requirements. This will allow for a more uniform final thickness and the soil will be less susceptible to erosion.
- A sentence that requires the placement of topsoil in such a way that the underlying geosynthetics are not damaged should be added to this paragraph. See the final sentence in the following sub-section, 3.2.2.3.1. Purpose and Function..

3.2.2.3.3. Material Type.

- Three quarters of an inch for the maximum particle size in a soil appears excessive. This would allow for the select fill to contain rocks.

3.2.2.3.4. Placement Requirements.

- It is recommended that the geosynthetics be permanently anchored at the top rather than temporarily as specified in this sub-section.
- In the sentence that begins "The select fill will not be dropped or dumped", the "and" between "geosynthetics" and "pushed" should be changed to "and/or".

3.2.2.3.4. Placement Requirements. Cont'd

- The requirement for the contractor to cover the geosynthetics as quickly as possible will not only be beneficial for the reasons listed, but also because the GCL should not be hydrated prior to the placement of soils on top of it.

3.2.2.3.6. Material Availability.

- The suitable off site select fill material sources identified in the Final Report should be listed.

3.2.2.4. Geotextile Filter Layer.

- The third sentence that begins "The filter layer could consist..." should be omitted. The next sentence states that the filter layer will be a geotextile filter thereby rendering the choice of geotextile over granular material unnecessary.
- The fifth sentence beginning "Once the geotextile filter" is confusing. The geotextile filter material should be specified. Also, the sentence contains some design criteria for choosing the select fill. Specifications for the select fill are already given in sub-section 3.2.2.3.3. Material Type..

3.2.2.4.1. Retention Criteria.

- A table defining the variables should be included in this sub-section.
- In the table representing Giroud's method, the "d" of "d(50)" should be capitalized to correspond to the "D" in the soil grain size definitions in the remainder of the sub-section.
- In the soil grain size definitions, the number within the parenthesis represents the percentage of soil passing (what sieve?) by weight?
- Why is a relative density of 50% used?
- The O(95) of the filter fabric is given as being equal to 70 to 100 or 0.21 mm. What are the units of the 70 to 100 range?
- In the beginning of the sub-section, it is stated that the apparent opening size (AOS) is the unknown for the geotextile filter. But, by the end of the sub-section the AOS of the fabric is a given and the Coefficient of Uniformity for the select fill is the unknown. Please clarify the knowns and unknowns.

3.2.2.4.2. Permeability Criteria.

- Are the units given for the permittivity value of 1.0 (1/sec) correct?
- The sentence beginning "The permeability of the fabric should" needs corrected.

3.2.2.4.3. Clogging Criteria.

- In general, it appears that this sub-section is closely related to the Retention Criteria sub-section. Maybe these two could be coupled together.
- The references to "silt-size particles" and "a high silt content" should be enumerated.
- The following is suggested as a replacement for the second sentence: (the changes are italicized and underlined) "Experiments by Haliburton and Wood using the Gradient Ratio Test indicate that clogging can be critical under test conditions which have high hydraulic gradients coupled with soils that ~~were~~ are cohesionless, ~~being~~ gap-graded and have ~~ing~~ a high silt content."

3.2.2.4.6. Tensile Criteria

- How will the cover system be designed to withstand various conditions that tend to lower the factor of safety?

3.2.2.5. Drainage Layer.

- The narrative in this sub-section is useless.

3.2.2.5.1. HELP Model Description.

- It is requested that the inputs and the outputs of the model be provided to the IEPA.

3.2.2.5.1.1. Climatological Data.

- Why is data from 1954 through 1973 used?
- In the final sentence, "generated" should be changed to "generate".

3.2.2.5.2. Input Data for the Cover and Landfill Cross-Section.

- The definition for "Porosity" is not correct. This may be partially how the value is calculated, but it is not the definition.

3.2.2.5.2.1.

- Explain further why default values are being used.

3.2.2.5.3.1. Geonet Drainage Layer Flow Capacity and Specification Requirements.

- It is stated that the current design approach is conservative because evapotranspiration is not considered in the sizing of the geonet, and that evapotranspiration is negligible during the storm. If it is negligible, then it can not be considered in the conservatism of the design. Is "evaporation" intended instead of "evapotranspiration"?
- How does the geonet connect to the weep holes?
- Will any backup of water that might occur at the weep holes cause excessive head?
- Are there numerical values for the factors of safety that are claimed to be included in the design?

3.2.2.5.4. Geomembrane Layer.

- How will the geomembrane be designed so that no tension will develop in the geomembrane over the steeper portion of the cover?

3.2.2.5.5. GCL.

- The full name of "geosynthetic clay liner" should be given.
- "Leu" should be changed to "lieu".
- The fourth sentence in the sub-section appears to run-on. It would be better if it were broken into a couple of sentences.
- The final two sentences in the sub-section are redundant.

3.2.4. Grading Requirements.

- Opening quotes are required before the word "specifications" in the first sentence.
- The stringent dust control measures to be implemented during grading of the pile should be detailed.

3.3. SETTLEMENT ANALYSIS.

- The information set apart by star bullets throughout this section needs formatted for aesthetic purposes. All words that begin the second line of a sentence should not appear to the left of the bullets.

3.3.5. Settlement Analysis Method.

- "Utilized" should be changed to "utilize".

3.4. Liner.

- A GCL only liner does not meet State ARARS and must be changed.

3.6.2. Settlement Monuments.

- The design and location of the monuments should be provided.

4.1.2. New Drainage Patterns.

- How will the new drainage patterns be analyzed? The runoff from the cap may be very significant.

4.2. EROSION AND SEDIMENTATION CONTROL.

- Contaminated soils must not be allowed to migrate from the construction area.

5.1. SOIL PROPERTIES.

- Where did the listed soil properties come from?

5.2. ALTERNATIVES.

- Does this section concern alternatives A & B for the pile or is it debating retaining walls against drilled pier walls?

5.3. EXCAVATION OF UNPAVED AREAS.

- It is suggested that the name of this section be changed to "EXCAVATION AROUND BUILDINGS."
- Which buildings are referred to in this section?
- Should the area utilities and underground storage tanks be mentioned in this section?

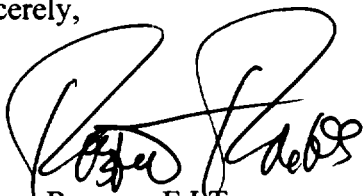
6.2. DISPOSAL OF DECONTAMINATION WATER.

- If a sewer is on site, then a permit may not be required.
 - Why does the POTW have to do the sampling?
 - What is under the asphalt pad on Trust 454 (the one used for the pugmill)? Is it just a sump that collected water for dust control or does it connect to the sewer?
 - It is recommended that one method for the disposal of the decontamination water be chosen by USEPA based on cost effectiveness and feasibility rather than giving the contractor a choice.
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- There are two Utility Relocation Requirements sections 6.3.1. and 7.3.2.. Are they both necessary?

In conclusion, the drawings and specifications for the cap design need work. They do not appear to represent the quality required in a project of this caliber. The IEPA still believes that leachate collection in the new landfill cell is not only required, but is also good engineering practice. The liner in the current design is very inadequate and does not meet State ARARs. The proposed groundwater extraction wells are not considered a leachate collection system by this Agency. It is requested that the USEPA respond in writing with their reasoning behind not proposing a collection system along with responses to the previous comments within this letter.

If you have any questions or comments, please contact me at 217/785-8729 or at the above address.

Sincerely,

A handwritten signature in black ink, appearing to read 'Robert Rogers', is written over a horizontal line.

Robert Rogers, E.I.T.
National Priorities List Project Manager
Remedial Management Section
Division of Remedial Management
Bureau of Land

cc: Division file
Terry Ayers